

plague, to their new host. I have seen a whole village in India deserted of inhabitants and all the huts apparently empty, but really they are full of hungry, starving fleas, as their natural hosts, the rats, have all died of the disease. Woe betide the man that enters those huts and sleeps in them!

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"One of the most striking characteristics of plague once it has become endemic is its seasonal prevalence. At or about the same time it yearly reappears, rises, declines and disappears. In India the disease lies dormant during the winter months, but as spring comes on the disease appears and increases and is at its height during the months of March and April. In May the hot weather arrives, and the decline is then rapid and in most places the disease disappears till the next spring. This is the history in the Punjab in North India, in which province I have served all my service. What is the explanation of it? It is no doubt caused by the disease remaining latent in rats, which are now proved to suffer from chronic plague during the non-epidemic season. This chronic plague has only lately been made out, and the lesions in the chronic disease are always in circumscribed abscesses and the animals are not emaciated or sickly. Post-mortem examination revealed abdominal abscesses and cultures taken from these abscesses were inoculated and proved generally fatal to the animals inoculated. The rats that suffer from chronic plague were very few in Bombay, but numerous in the villages of the Punjab, and the position of their abscesses in the abdomen leads one to infer that they are infected through the intestine.

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"Plague bacilli are therefore unable to live a saprophytic existence and it is necessary for their propagation to live in the living tissues and blood of the rat. The nature of the disease bears this out: Plague is an acute septicemia. At first it generally enters by the lymphatic system, and nature's attempt to arrest it in the lymph glands is the cause of the bubo. In the later stage and in all fatal cases it becomes a general infection, and the bacilli are found in the blood and internal organs.

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"The future outlook and likelihood of the spread of the disease to Europe is a very serious problem. The disease in eleven years has spread through the whole of India and I have no doubt will next infect Afghanistan and Persia. These countries lie in the northwest frontier and are adjacent to Russia in Europe, and they are not likely to adopt more vigorous measures than have been done in India. Wherever the plague-carrying rat and its flea, the *Pulex Cheopis*, can travel and live the disease is sure to spread, and I believe it will reach Europe overland.

"The rat flea, *Pulex Cheopis*, has been found and is common in warm climates, but is rare in North Europe. The flea described in Sydney, Brisbane, and Australia, is similar to *Pulex Cheopis*. The same or similar flea is found in seaports of Italy and Marseilles. It is very common in South America, and has been found in Egypt and South Africa. I regret to

say that the disease has attacked the United States, and San Francisco is now fighting to get rid of the disease, and I have no doubt that the *Pulex Cheopis* has been found on the rats of that city. (It has.—Editor.)

"The condition of affairs in the seaport of San Francisco must be similar to that existing in Sydney, which has suffered several infections by plague.

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"The value of rat destruction is doubtful. Reports from the Punjab are greatly in its favor, and it is being carried out vigorously. However, it was found in Tokyo in Japan, that the result after destroying four million rats was that the breeding rate increased as the struggle for existence amongst rats was relieved. A new suggestion, I believe of the Salvation Army, is to import a ship load of cats to India to kill rats."

SOME POINTS ON THE SYMPTOMS AND LOCALIZATION OF INTESTINAL OBSTRUCTION DUE TO CARCINOMATA, WITH REPORT ON FOUR CASES.*

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In presenting the record of these cases, and the pathological specimens obtained from them, it is my intention to touch only upon the features of each that seem pertinent to diagnosis. They all offer, at some stage, symptoms of partial occlusion of the lumen of the intestine. The fact that in one case no recognition of this condition, even when multiple partial stenotic areas were present in the small intestine was made prior to autopsy first interested me in the subject, and I have gathered these cases together as illustrative of stenosis in different parts of the bowel. It is with the hope of calling your attention to a few of the salient points that should be kept in mind in such conditions that I bring these histories and specimens before you.

Case 1. Gelatinous Carcinoma of Appendix and Peritoneum. History. Woman, a teacher, age between 33 and 37 years. Seven years ago, while in Great Britain, had a very grave abdominal illness, called "inflammation of the bowels," accompanied by great pain and fever. After six weeks, a gradual recovery took place, and in one year she was ordinarily well. Four years ago I saw her in an attack, with low fever, similar to the first but much milder, and found tenderness and muscular spasm over a mass the size of a small sausage in the lower right abdomen under McBurney's point. Because of fear of dense adhesions an immediate operation was not deemed wise or necessary. The attack soon subsided. The patient was seen several times afterwards for other illness, tonsillitis, etc., and complained of no pain or intestinal disturbance, but the mass was always present and somewhat tender. An operation was suggested, but declined. After two years' absence the patient returned from teaching country school, where she had walked a long distance each day, complaining of pain and flatulence and noisy peristalsis, with frequent movements, which she ascribed to cascara, taken for constipation. A similar attack occurred three months before, but subsided after two weeks, leaving her well and with no bowel disturbance. She desired to know whether the condi-

*Read before the California Academy of Medicine.

tion of her appendix would be a bar to matrimony. Examination showed a somewhat protuberant abdomen, with thick fatty walls, dull on much of the right side, with a hard tender mass apparently as large around as a bologna sausage and about four or five inches long, lying under McBurney's point in the direction of the usual incision for removing the appendix. Because of the apparently quiescent condition and of the desire to marry, with probable pregnancy, an operation was advised. She seemed to be in good health, had gained in weight and felt unusually well except for the pain and diarrhea.

Diagnosis. The diagnosis made was that of an old appendicular abscess with thick adhesions. The pain complained of was thought to be due to some of these adhesions interfering with proper bowel action. No satisfactory explanation for the dullness in the right side was made prior to operation. After admission to the hospital, the administration of a cathartic and the use of an enema brought away a copious and apparently normal stool free from mucus. Operation was performed January 6, 1907, by Dr. I. M. Williams and myself.

Incision over the mass brought into view a thickened peritoneum with hard small calcareous and colloid masses imbedded in it and with numerous thickened adhesion bands extending in all directions. The whole extreme right side of the peritoneal cavity was cut off by adhesions into pockets or small cysts, filled with clear peritoneal fluid. As these pockets were broken up, the fluid, to the amount of a pint or more, was released, and after much dissection and ligation of vessels, the mass felt presented in the wound and was gradually worked to the surface. It was found to consist of the appendix greatly thickened and distended and filled with a broken down dark reddish-looking material apparently containing degenerated tissue and small cysts. There was no odor to the contents and no pus present. The cavity of the appendix was about three-fourths of an inch in diameter and four inches long, and there was a constriction near its base completely occluding it from the apparently normal caecum. A purse string suture was applied, the appendix ligated, cut off, and the stump easily invaginated into the caecum. Drainage was used when sewing up the incision, because of the fear that the contents of the appendix were not sterile and its friable wall had been ruptured in one place in removing it. The patient left the operating room in good condition, after a somewhat prolonged ether anesthesia. There was some vomiting and painful peristalsis, i. e., gas pains, was early established, but in about twelve hours she developed a severe ether pneumonia which caused her death thirty hours later. There was no evidence of acute peritonitis, but we were occasioned much distress an hour prior to her death by the passage of several ounces of dark bloody discharge from the rectum.

An abdominal autopsy was made through the incision. The site of operation was found free from evidences of bleeding or infection. After entering the general peritoneal cavity, which had not been seen at the time of operation, and which contained about one pint of clear fluid, the whole peritoneum was found studded with colloid like growths up to the size of a hazelnut. The omentum was somewhat thickened and while covered with small masses of various sizes was not retracted. In about fourteen or fifteen places annular growths were found on the small intestine. In some cases these had restricted the lumen to the size of a slate pencil. The bloody rectal discharge evidently came from the ulcerated inner surface of some of these growths. The serosa was apparently the only part involved, and the mesentery was not much affected. The following pathological report was made on the appendix by Dr. Ophuls:

Appendix extremely enlarged—about 12x4 centimeters; wall very thick, infiltrated with gelatinous

material; lumen distended and filled with dark, pulpy blood-stained detritus. The cavity of the appendix was completely shut off from the caecum. Sections of the appendix show all through the wall large spaces filled with mucus and large epithelial cells. Diagnosis: carcinoma (gelatinous) of the appendix."

In reviewing this case there is some excuse for not making a preoperative diagnosis—the rarity of carcinomatous growths of the appendix and of the small bowel, the absence of anemia, the increasing weight and the history and findings, casually considered, all pointed toward the diagnosis made, but had the lesion found been suspected, a more correct interpretation could have been reached. The history of alternating constipation or regular bowel action with diarrhea and colic, the noisy peristalsis, the dullness of the right flank, the somewhat protuberant abdomen, might well have been used for some other explanation than that of adhesions interfering with normal bowel action.

This case illustrates some of the difficulties of diagnosing small bowel stenosis even when multiple annular growths are present and also the tolerance of the small intestine to such anatomical disturbances.

Case II. Carcinoma of Duodenum. Woman, age 51 years, a steamstress. First seen May, 1906. Complaints of distress and eructations after meals, thirst, increased appetite, constipation, is very nervous, and has been working hard. Weight is stationary; urine normal. Examination shows a somewhat prolapsed stomach with hyperchlorhydria (about 85 to 95). After lavage, careful dieting, rest and laxatives she reports herself on August 2, 1906, as feeling very well and free from distress. She returned to her home in San Francisco and began work and was not seen again until February, 1907, six months later. Then she reported that for three months she had been feeling badly; had lost her appetite, had a distaste for meat, had severe pain in the abdomen at times, particularly in the right hypochondrium and had marked constipation. There was considerable belching, but no vomiting. The stomach was found markedly dilated, extending almost to the pelvis, and in its contents after Ewald test meal there was free HCl and lactic acid present, with a total acidity of about 85. Visible gastric peristalsis was noted. On the right side of the abdomen below the liver there was tenderness and marked muscular spasm, but no dullness or mass was to be made out. The urine was scanty, contained a small amount of bile and albumen with casts, but no sugar. A slight icterus soon developed and became more intense as time went by. The stomach was washed each night and morning, and would be found in the morning to contain from one-half to two pints of acid bile-stained liquid containing quantities of mucus. The last flow from the tube was usually pure bile. No alkaline pancreatic juice was detected. The stools became clay-colored.

A diagnosis of carcinoma of the middle or lower portion of the duodenum was made, and it was suspected to have developed on the site of a duodenal ulcer caused by the intense hyperchlorhydria. At no time was there distension of the abdomen indicating obstruction low down in the gut.

The patient gradually grew weaker, refused all food except liquids, vomited when sufficient lavage was not practiced, and passed quantities of bile by the stomach. No form of operation was consented to or strongly advised. There was marked pain when solid food was taken, and the bowels soon became obstinately constipated. The patient

died from starvation, after being under observation for a month. By common consent no food was taken the last week, no pain was present, no hemorrhage occurred. No blood was found at any time, when the stools or stomach contents were examined, but one dark-colored stool was passed, which was not saved, and it probably contained blood. An abdominal autopsy showed a small carcinomatous growth almost completely occluding the middle portion of the duodenum, with a small ulcerated area in the region of the opening of the gall duct. The gall duct was markedly dilated, but the gall bladder was only moderately distended and free from stones. The stomach was much enlarged, reaching to the pelvis, and the pyloric valve could not be made out. Except for the moderate inflammatory condition of the kidneys, the other abdominal organs seemed normal.

The diagnosis here from pyloric carcinoma, impacted gall stone in the duodenum, enlarged retroperitoneal glands, carcinoma of the head of the pancreas, and gall stones with infection and adhesions was comparatively easy, and was based on the history, the evident obstruction, the jaundice, the absence of glycosuria, the hyperchlorhydria, the quantities of bilious fluid in the stomach, particularly soon after lavage, the spasm of resistance over the duodenal region, although a definite tumor was not felt. In spite of the rarity of duodenal cancer its diagnosis need not be difficult, if below or in the papillary region.

The diagnosis of suprapapillary involvement could hardly be distinguished from pyloric carcinoma. In this case the site of origin of the growth was evidently near the papilla and gradually extended to it and caused its obstruction, making the picture presented a clear one as the symptoms were unfolded.

Case III. Scirrhus Carcinoma of Rectum, Colon and Ileocaecal Valve. Woman, housewife, age 62 years. First seen in May, 1906, for constipation and marked loss in weight. The bowels would be very obstinate until a small amount of cathartic drug was taken, and then they would run off very freely for several days. She had no pain, except after ingestion of fruit skins or laxative drugs, no tenesmus, no hemorrhoids, no blood in stools, but at times had noticed mucus. Appetite was fair, tongue coated, sleep disturbed at times by a noisy peristalsis. Carcinoma of the rectum was suspected, and a rectal examination showed a hard mass causing an annular constriction about three inches from the anal margin. There was no ulceration, and only moderate tenderness, and a 26 F. rubber catheter passed the obstruction readily. Careful abdominal examination revealed a large hardened mass in the right iliac region extending from the anterior superior spine towards the umbilicus and boggy non-sensitive lumps along the whole course of the colon. Visible peristalsis could readily be elicited in the small bowel by rubbing the abdomen. The stomach and other abdominal organs seemed normal. A small nodular growth the size of a large bean was found on the finger of one hand. This occurrence of a small peripheral growth is a condition I have noticed several times in malignant disease of the bowel. After several injections of olive oil beyond the rectal stenosis a considerable amount of saturated solution of magnesium sulphate was given by rectum and followed later by mouth, and a large painful of fluid fecal matter and mucus was passed. Abdominal examination now brought out still the mass extending towards the umbilicus, but the colon seemed empty except for small lumps

and hard areas in two places in the transverse colon and low down above the rectal stenosis. Multiple stenosis of the colon and carcinoma of the ileocaecal valve was diagnosed, the latter because of the visible small bowel peristalsis and persistent sausage-shaped mass in right iliac region.

The urine was normal, there was no jaundice, no vomiting. A strict liquid diet was well borne, if enemas were used to empty the bowel, but a small amount of laxative or fruit caused a diarrhea of two or three days' duration, accompanied by much pain and flatulence. The patient's condition was explained to her, with the possibilities of relief by operation, which she declined. After some weeks of liquid diet with gradually increasing difficulty of emptying the bowel and progressive loss of strength and weight, she sent for me one morning two months after I had begun the treatment of her case, arranged some final matters, told me that she wanted me to perform an autopsy after her death and see if I was right in my diagnosis, turned over in bed and refused to eat or talk, and died one week later. Autopsy revealed a hard scirrhus carcinoma of the rectum without ulceration and multiple growths in the colon, two of them reducing the size of the lumen of the transverse colon to about that of a lead pencil. The ileocaecal valve was the seat of a hard scirrhus growth and its caliber was much reduced and a hardened fecal mass was found in the ileum just above the valve. The liver was not involved, and no secondary growth except the one on the finger was noticed.

Here again the diagnosis of multiple stenosis of the bowel is comparatively easy. The history, loss in weight, spurious diarrhoea, mucus in stools, the abdominal and rectal findings all pointed not only to a stenosis but also permitted of fairly exact localization.

Case IV. Gastric Carcinoma with Peritoneal Carcinomatosis. A gardener, age 55 years. Was called to the patient by a neighbor who found him shrieking with abdominal pain. I found him lying face down across the bed with his stomach pressed against a pillow. He gave a history of having never been sick until six weeks before, when, following the "grip," his stomach began to pain him and he was unable to eat any food except liquids and toast. He had been under the care of a physician for a few days previous to my first visit, and had been given some laxative and a pepsin combination. The abdominal pain had been gradually getting worse for several days until it had become unbearable. The patient was a large, powerfully apparently healthy man who had not lost in weight. The temperature and pulse were normal. The abdomen was found somewhat distended, but not tender to pressure except over a small area just above the umbilicus. The liver dullness was normal. Loud peristalsis could be heard, but the bowels had not moved for several days. A provisional diagnosis of severe constipation with a possible perforated gastric ulcer was made. Considerable morphine was required to relieve the pain. A milk and molasses high enema brought away several quarts of fecal matter with marked relief, and the patient felt so well that he insisted upon getting up and around for two days, when he had a return of the pain and was sent to the hospital. The abdominal condition was found as before, the temperature normal, but the pulse had gone up to 100. Pain was very severe and constant. Marked spasm of the recti above the umbilicus was present, and a very sensitive area about one inch wide extending from one and one-half inches above the umbilicus to the right and then directly downward to the level of the umbilicus, and one inch from it was noted. Loud peristalsis could be heard; although the bowels were obsti-

nately constipated. A diagnosis of local peritonitis from gastric ulceration was made and adhesion interfering with bowel action was suspected. Any form of operation was declined. The patient complained bitterly of a constant heavy feeling in the abdomen. Some relief would occasionally be experienced if gas could be passed per rectum, which took place rarely, or if belching would take place. The pain was felt most just above the umbilicus, although occasionally directly under the sternum. There was no pain or tenderness along the spine. The supraclavicular glands were not swollen, and there was at no time edema of the ankles. Liquid food was taken, but its ingestion was followed by immediate pain. The stomach tube was resolutely declined until a few days later, when he began to vomit, when it was passed once and the stomach washed out, but it caused so much distress that it could not be repeated. The washings contained masses of dark colored mucus, which reacted positively to the guaiac test for blood pigment. The vomitus of the patient consisted at first of the food taken, mixed with mucus, and it contained lactic acid and some free HCl. No blood was found. The patient began to fail rapidly in strength and weight, to have increasing difficulty with constipation, to vomit more and to have constant pain or heaviness in the abdomen. A loop of bowel became distended with gas and stood out clearly on the left side of the abdomen. A gastric carcinoma with peritonitis at its base was now diagnosed. A week later dark-reddish fluid giving a positive guaiac test was vomited. A small bowel movement of almost pure pus and mucus was passed, and after it the bowels moved more freely. The distension of the abdomen became more marked, and there was flatness on both flanks and the lower portion. The kidneys continued to secrete a small amount of normal urine. The breath became very foul. Large amounts of morphin were required to give any comfort. The patient began to hiccough, the fluid increased in the abdomen, there was occasional vomiting of very foul smelling, bloody fluid, and only two weeks after the patient was first seen and eight weeks after first symptoms complained of, he died, apparently from exhaustion. Upon autopsy, the body, except for the abdomen, was that of a healthy, powerful man. The peritoneal cavity contained about two gallons of clear fluid. The omentum and mesentery were thickened and retracted and the peritoneal surface was studded throughout with small masses from a pin-head size to that of a half pea. The transverse colon was attached to the stomach and the whole colon filled with dark blood. The small intestine was distended with gas, but contained no blood. Upon opening the stomach a foul round ulcerating area about two inches by two inches upon a thick carcinomatous base was found. Adhesion bands extended in various directions in the peritoneal cavity and the bowel seemed encroached upon by some of these, but careful examination did not determine any point of marked obstruction, and I do not know whether the constipation noted was due to adhesions, to the abscess from which pus drained, or to peritonitis. Apparently death was hastened by the loss of the blood found in the large bowel. The pus obtained at one time from the stool was probably from a small abscess rupturing into the colon, as it was not admixed with fecal material.

In this case, while there was some evidence of intestinal obstruction, at no time was malignant growth of the bowel itself suspected, the symptoms and signs pointing to the stomach and peritoneum.

In looking at all four cases together it is clear that a fairly correct diagnosis of the causes and location of the disease was made in three cases,

where there was some bowel obstruction, but in the one with multiple growths of the small intestine it was not even suspected. Here the abdominal wall was thick and fat and no tumor mass large or small was felt except that of the appendix, and all attention was directed to that.

The differentiation of chronic bowel stenosis or occlusion due to new growth and the interference with peristalsis in chronic peritonitis is full of interest, and in distinguishing the two, where no tumor mass is found, after examining all possible hernial openings and the rectum we should seek for visible peristalsis as a sign of occlusion and pronounced tenderness on pressure as indicative of peritonitis. The chronic stenosis and obstruction are readily separated from the acute by the irregular symptoms, moderate abdominal pain, slight vomiting, history of constipation and spurious diarrhea, the loud gurgling intestinal sounds, the history of coated tongue, and normal temperature, and usual uneven distension of the abdomen of the chronic form and the more violent pain, severe vomiting, and collapse generally present in the acute form.

From the cases reported it would seem evident that the localization of some of the growths of the intestine is possible, particularly if in the rectum or lower part of the duodenum. In diagnosing stenosis of the small bowel a few points are helpful. Rectal irrigation will often empty the colon, and with remaining abdominal distension and changes in shape of abdomen from distended loops of intestine will often point to the small bowel as the seat of obstruction. Pain is such a common functional symptom that unless it is constantly felt by the patient and tender to pressure at a given point it is not of much value, although it usually comes earlier as a symptom of small bowel involvement than of large. Indicanuria has been urged as more indicative of small bowel stenosis than of large, when present in a suspected case. Examination of the stool, aside from the presence of bile, can be of little value in localizing the point and cause of obstruction, but of course the presence of blood and mucus may throw light on the case in general. Vomiting is usually more violent and severe and more readily stercoraceous in small intestinal occlusion than in large. But the symptoms are so interchangeable and variable that the accurate localization and cause of a chronic stenosis of the bowel, except in the rectum and duodenum, is probably, as Nothnagel has said, the most difficult task of anatomic diagnosis.

SAN FRANCISCO SOCIETY OF EYE, EAR, NOSE AND THROAT SURGEONS.

THE TREATMENT OF SYPHILIS OF THE EAR.

By M. W. FREDRICK, M. D., San Francisco.

In marked contrast to the large number of cases of syphilis occurring in the practice of eye, nose and throat diseases the number of ear affections traceable to syphilis is very small. In fact, some of the older writers were emphatic in the statement that lesions